

U.S. Department  
of Transportation  
**Federal Highway  
Administration**

**LTPP Seasonal Monitoring  
Program**  
Site Monitoring Suspension  
Status Report  
Section 371028  
Elizabeth City, North Carolina

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# SEASONAL MONITORING PROGRAM SUSPENSION STATUS REPORT

## NORTH CAROLINA SECTION 371028

### I. INTRODUCTION

The seasonal site 371028 near Elizabeth City, North Carolina has two rounds of data collection to date. The last round of data collection was from October 07, 1997 to October 20, 1998. Table 1 provides a summary of the Round One, Loop 2 data collection from May 18, 1995 to September 26, 1996. Table 2 summarizes the Round 2 data from October 02, 1997 to October 20, 1998. The instrumentation remained in place between Round 1 and Round 2 for which limited Onsite data was collected by North Carolina DOT. On October 20, 1998, all site suspension activities were completed at this site according to LTPP Directive SM-8 "Suspension of SMP Site Monitoring Activities". The site has been permanently dismantled; no further monitoring is planned at this site as the MRC TP101 temperature probe is no longer operational.

This report entitled "SMP Site Monitoring Suspension Status Report" details the suspension preparation activities; site specific conditions, and provides information pertinent to seasonal site 371028.

### II. SUSPENSION PREPARATION ACTIVITIES

A manual distress survey of the entire section and cross profile surveys were conducted in conjunction with the SMP data collection at site 371028 on September 29, 1998. As is evident from the photo's, longitudinal wheel path fatigue cracking is evident in the wheel paths. Average rut depth measurements from the September 29 survey were 13.2mm in the left wheel path and 12.1 in the right wheel path. The site markings were refreshed at the time of the MDS survey.

The final suspension activities at site 371028 were conducted during the site visit on October 20, 1998. On this day, one SMP FWD test, one set of long-term FWD tests (152.4m), one set of elevations, and a distress survey of the instrumentation area were conducted. Water table measurements were performed in the morning and afternoon. The Onsite datalogger was downloaded before being dismantled. Two sets of TDR traces were extracted by the mobile datalogger. The instrument hole and trench, which were extensively maintained throughout the project, were in good condition.

The air temperature probe, tipping bucket, and upper part of the support pole were dismantled. The lead wires from the air temperature probe and tipping bucket were removed from the cabinet. The above ground conduit from the pole to the cabinet was removed. A 50mm cap was installed on the pipe remaining in the soil.

After all the wires were disconnected from the control panel, the panel was detached from the equipment cabinet with the CR10 datalogger, terminal strip, and the battery pack attached to it. The cabinet with spikes attached was removed from the ground. The TDR cables, and MRC wire leads were tied, placed in a large plastic bag and buried at the cabinet location. After the last piezometer reading was recorded, the pipe was cleaned and sealed with grease. The access cover and seat were cleaned and lubricated before being covered and brought up to grade with native soil.

The Profilometer survey corresponding to close-out was conducted on November 05, 1998. The IRI at the time of the survey was 1.051 m/km. This is in line with the July 1998 survey (1.054 m/km) and slightly up from the February 1998 survey (0.930 m/km).

All the necessary suspension activities were completed on October 20, 1998. The dismantled equipment was removed from site. The dismantled site contains all the underground instrumentation and the related cabling buried underground. The above ground instrumentation area was leveled.

### **III. SPECIAL SITE CONDITIONS**

The installation of site 371028 closely followed the "LTPP Seasonal Monitoring Program: Instrument Installation and Data Collection Guidelines". The placement of the combination piezometer/bench mark was complicated by the lack of stability of the saturated sandy subgrade and the high water table. The standard 4.27m pipe was replaced by a 3.71m pipe. No bentonite clay was used during the installation of the piezometer because of the collapsing soil. Extra compactive effort was required.

The removal/replacement of the material from the instrumentation hole was successful, with the material being well consolidated around the instrumentation. The surface friction coarse became unbonded from the core during the installation. This material was replaced with a thin cold mix patch bonded on the circumference with a mixture of sand and epoxy. The core was level with the existing pavement surface at completion.

M<sub>R</sub> coring according to Directive M-18 was completed June 30, 1998.

### **IV. SUPPLEMENTAL INFORMATION**

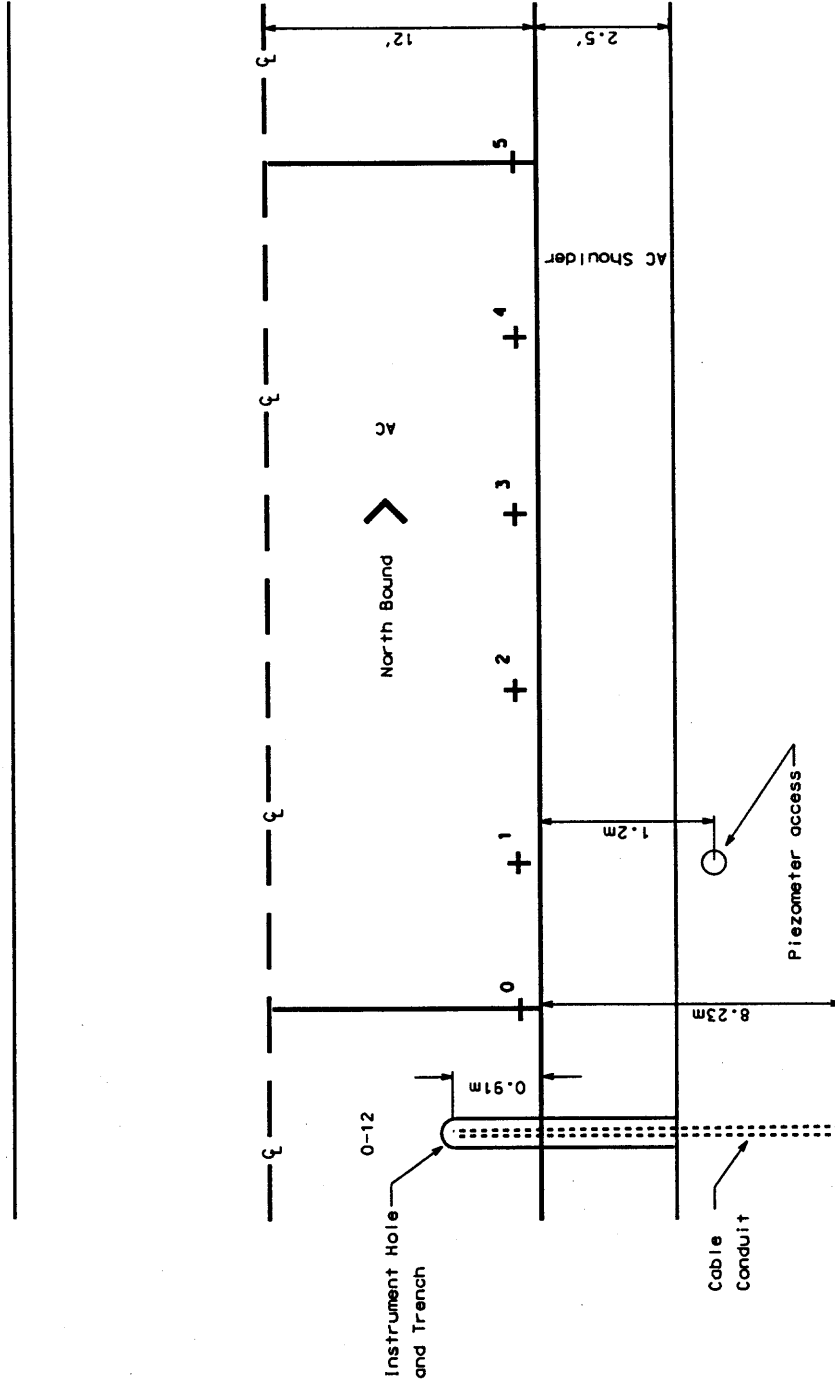
Figure 1 shows the locations of the installed instrumentation at the site after close-out. The instrument hole is at Station 0-12 and the piezometer is at Station 1+00. Table 3 gives the elevations of the portion of test section 371028 that was used for elevation measurements. All offsets are measured from the PK nails found at the outside pavement edge.

At the time of suspension, the 18 thermistor MRC probe was inoperable. This probe has been out-of-service since 0300 hour on May 30, 1998. In discussions with Measurements Research Corporation (MRC), failures of this nature usually occur as a result of a break in the cable at the junction of the MRC probe. If the probe moves, or insufficient slack is left in the cable, a break can occur. For this site, it is possible some soil movement and resulting probe movement could occur as the road bed is built over a swamp within site distance of the Atlantic ocean.

The plots from ONSFIELD, MOBFIELD and SMPCHECK follow expected trends and produce expected values; the exception being the MRC thermistor probe since the failure on May 30, 1998. Pictures from the site suspension are provided at the end of this document.



Figure 1. Plan view of Section 371028 -  
Post Suspension



Notes: 1. This drawing reflects the conditions after the close-out conducted on October 20, 1998.

SCALE:	N.T.S.
PLOT DATE:	27.1.99
CREATED BY:	S.M.

Location of buried TDR and MRC cables

[illegible]

[illegible]

**Table 3 . Surface Elevation Measurements**

LTPP Seasonal Monitoring Study	State Code	[37]
Surface Elevation Measurements	Test Section Number	[1028]

Survey Date	October 20, 1998
Surveyed By	James Vogt
Surface Type	AC
Benchmark	Observation Piezometer - 1.000 meters - assumed

<b>STATION</b>	<b>PE m offset 0.15</b>	<b>OWP m offset 0.81</b>	<b>ML m offset 1.83</b>	<b>IWP m offset 2.74</b>	<b>ILE m Offset 3.63</b>
0-18	1.1975	1.2050	1.2425	1.2500	1.2850
0-12	1.2000	1.2125	1.2450	1.2525	1.2875
0-07	1.2025	1.2050	1.2400	1.2500	1.2875
0+00	1.2025	1.2100	1.2425	1.2550	1.2925
0+25	1.2175	1.2175	1.2550	1.2675	1.2975
0+50	1.2075	1.2150	1.2525	1.2600	1.2950
0+75	1.2050	1.2150	1.2525	1.2625	1.2950
1+00	1.2100	1.2250	1.2550	1.2650	1.3000
1+25	1.2150	1.2250	1.2625	1.2700	1.3000
1+50	1.2075	1.2125	1.2525	1.2650	1.2925
1+75	1.1975	1.2075	1.2450	1.2500	1.2825
2+00	1.2025	1.2100	1.2450	1.2500	1.2825

PE	Pavement Edge
OWP	Outer Wheel Path
ML	Mid Lane
IWP	Inner Wheel Path
ILE	Inner Lane Edge

Notes: 1. Offsets are measured from the PK nails at the outside of the pavement stripe at the pavement edge.





Pavement Condition, Seasonal Site 371028, September 1998, Pre Suspension Activities



Pavement Condition, Seasonal Site 371028, September 1998, Pre Suspension Activities



Intrument Hole, Seasonal Site 371028, October 1998, After suspension Activities



Equipment Cabinet, Seasonal Site 371028, October 1998, During Suspension Activities





Instrumentation Location, Seasonal Site 371028, October 1998, After Suspension Activities



Piezometer Location, Seasonal Site 371028, October 1998, After Suspension Activities